Comments on SR-210 Modeling Protocol

Overall Comment: We would like to see further details regarding the meteorological data, the emission modeling and the AERMOD modeling in the modeling protocol. Based on our review of other completed projects, having a detailed accounting of the options to be used could prevent the need for remodeling upon our review of the final modeling documents. Most of our comments below go into more details regarding where we'd like to see additional information.

Traffic Data - Both the current draft of the Modeling Protocol and the draft partial report for the project contain no information on traffic data (including traffic volumes and numbers of trucks per link) for the build and no build alternatives. In January of 2013, the SCAG Transportation Conformity Working Group made a determination that this project was not a project of air quality concern (see attachment). Why is Caltrans moving forward with a quantitative hot spot analysis for this project? Is the analysis being done only for NEPA purposes?

Please include the data for the mainline and any nearby intersections that will be included in the modeling. In addition, is traffic data available for different periods within the day. We expect quantitative modeling protocols to indicate what hours of the day are associated with morning peak, midday, evening peak, and overnight, please include this information.

Project to Be Modeled: Page 6 of the partially completed documents currently states "According to the Guidance, a hot-spot analysis must include the entire transportation project. As such, the entire project length was modeled." This statement is inconsistent with EPA's Guidance. Section 3.3.2 of EPA's quantitative PM hot-spot guidance states: "For large projects, it may be necessary to analyze multiple locations that are expected to have the highest air quality concentrations and, consequently, the most likely new or worsened PM NAAQS violations. If conformity is demonstrated at such locations, then it can be assumed that conformity is met in the entire project area." This approach is actually briefly discussed in the protocol, however there are no details regarding which intersections have been determined and no traffic data to support those determinations. Please include that information in the modeling protocol. As noted above, having the traffic information is necessary to review this project analysis protocol, including determining which parts of the project will be analyzed.

Analysis Approach and Analysis Years: The document states that 2020 and 2040 will be modeled, but contains no justification for analysis of those years. The protocol needs to be clear on why the chosen analysis year or years are expected to be years in which peak emissions will occur. Section 3.10 states that the documentation of the analysis should include "a description of the analysis year(s) examined and the factors considered in determining the year(s) of peak emissions." Please provide more rationale on why the peak emissions could be occurring in 2020 and 2040.

Section 2.8 of EPA's quantitative PM hot-spot guidance states: "Areas should analyze the year(s) *within the transportation plan or regional emissions analysis*… during which peak emissions from the project are expected; and a new NAAQS violation or worsening of an existing violation would most likely occur due to the cumulative impacts of the project and background concentration in the project area." The current SCAG transportation plan only covers the years 2012-2035, and EMFAC only estimates emissions out to 2035. While modeling

of the later design year (2040) is allowed, the conformity rule requires that the project show conformity within the timeframe of the area's Regional Transportation Plan to be consistent with section 93.116(a)[1] of the conformity rule. As a result, we request that a 2035 analysis year be added to the PM hot-spot analysis.

On p. 4 of Appendix A, it states "the build alternative and no-build alternative will be evaluated at both analysis years." We suggest that the build alternative be modeled first to determine if modeling a no-build scenario is necessary for transportation conformity purposes.

Emission Information

Please provide more information regarding how EMFAC-PL will be used. For example, what speeds will be used for the facility? How many (number) of EMFAC runs will be conducted? Please see Section 5.3 of our PM hot-spot guidance for the discussion of how EMFAC-PL can be used. There is no discussion of No-build alternative. Please include examples of how this analysis would be modeled in comparison to the build scenario. In addition, the modeling protocol indicates that re-entrained road dust emissions will be calculated using the AP-42 calculation formulas for paved roads (Fifth Edition, Volume I, Chapter 13.2.1, revised January 2011). Can you confirm that total vehicle miles traveled for each year will be used to estimates fugitive dust, not centerline miles?

AERMOD Emission Sources and modeling parameters: The description of the dispersion modeling indicates volume sources will be used (p.7). EPA's guidance discusses using either volume or area sources and either are appropriate. Experience, though, suggests that area sources are easier to use and we would recommend using them, if modeling has not yet been done. Please provide more information about how the emission sources will be set up in AERMOD.

The protocol states that the BEE-LINE Software BEEST version 10.13 software will be used with AERMOD. We assume that this software does not change AERMOD's results or how the model fundamentally operates. Please confirm that this is the case. Since the project sponsor is proposing to analyze a sub-section (or sections) of the project, using the FASTALL option with AERMOD does not appear to be part of the protocol. Please confirm.

The protocol contains no information on how AERMOD modeling parameters, such as surface roughness. Please include more details on how surface characteristics will be used and how these were determined.

Maps / Background Data:

Monitoring Data

Please show the location of any other local met or ambient data stations that were not considered on Figure 1. Please expand discussion of meteorological data to include a discussion of the

[1]Section 93.116 (a) reads: "This criterion is satisfied for all other FHWA/FTA projects in CO, PM_{10} and $PM_{2.5}$ nonattainment and maintenance areas if it is demonstrated that during the time frame of the transportation plan no new local violations will be created and the severity or number of existing violations will not be increased as a result of the project, and the project has been included in a regional emissions analysis that meets applicable §§93.118 and/or 93.119 requirements."

representativeness of the meteorological monitoring site, other sites available and why chosen site is best suited to the project.

Meteorological data: The modeling protocol indicates that data from 2007-2011 for San Bernardino station will be used. This data was acquired from the South Coast Air Quality Management District (SCAQMD), prepared using AERMET version 14134, and has passed the requirement for 90% completeness by quarter for wind direction, wind speed, and temperature. We would like to see more information on how the meteorological data for this project was selected, what other potential sites are in the area and why other sites (including airport sites) were not selected.

Monitoring Data: The nearest air quality monitoring station in the vicinity of the project area is the San Bernardino-4th Street monitoring station, which is located approximately 2.5 miles south of the east-west SR-210 alignment and approximately 4.2 miles west of the north-south SR-210 alignment. The protocol indicates that PM_{10} and $PM_{2.5}$ background concentrations were developed consistent with the methodology detailed in the Guidance using the "single monitor" approach. Since the document states that the San Bernardino-4th Street monitoring station meets all EPA requirements for (1) similarity of characteristics between monitor location and project area, (2) distance of monitor from project area, and (3) wind patterns between the monitor and project, we would like documentation on how these requirements are met. The bullets below include more details on how this comparison can be made.

- Please include google maps to show land use around the project and nearby monitoring stations.
- Please include wind roses to near each monitoring station in the figure if available
- Please provide further information on why other monitors in the area were not chosen and why.
- It would be useful to include a table with the monitors under comparison at each site (with monitor type and sampling frequency, DVs etc). For PM10 and PM2.5, include a monitor descriptions (e.g., FEM, SLAMS), sampling frequency, scale of the monitor, data completeness, please include all of the monitors around the project area.

24-Hour PM10: For 24-hour PM10, the protocol notes that the appropriate background concentration is simply the highest recorded 24- hour concentration from the previous 3-year period that meets all applicable EPA monitoring requirements, such as data completeness. Per the EPA Monitor Value Reports (see Appendix), the highest 24-hour PM_{10} concentration recorded at the San Bernadino-4th Street station during the 2011 – 2013 period was 102 μg/m3. EPA is re-evaluated the PM_{10} design concentration methodology in Section 9.3.4 of its November 2013 "Transportation Conformity Guidance for Quantitative Hot-spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas" and is considering further flexibility in what air quality monitoring data is used for design value calculations for PM hot-spot analyses, and it is important to be more consistent with how monitoring data is handled for calculating NAAQS design values for designations and other air quality planning purposes. The options depend upon the monitor's sampling frequency and the number of samples collected per year. Furthermore, there are also considerations, for both PM_{10} and $PM_{2.5}$ regarding collection of

continuous or filter based data, both of which are listed in the AQS data included in the protocol. We are currently discussing the options for PM_{10} and $PM_{2.5}$. Once we have additional data on the monitors considered for background data, we can discuss our recommendations for use of the two data sets.

24-Hour $PM_{2.5}$: As noted in the protocol, for 24-hour $PM_{2.5}$, the Guidance provides two analysis options, or tiers, to determine the appropriate background concentration. Under the tier one approach in this analysis, the background concentration is developed by averaging the measured 98th percentile 24-hour concentrations from the previous 3-year period that meets all applicable EPA monitoring requirements, such as data completeness. Per the EPA Monitor Value Reports, the average 98^{th} percentile 24-hour $PM_{2.5}$ concentration recorded at the San Bernatdino-4th Street station during the 2011 – 2013 period was 31.67 μg/m3. Please confirm that the analysis will show conformity to both the 2006 $PM_{2.5}$ standard and the 1997 $PM_{2.5}$ standard. While the analysis to the more stringent 2006 $PM_{2.5}$ standard of 35 μg/m3 will also show conformity to the earlier standard, the analysis should document conformity to both standards.

Annual $PM_{2.5}$ As noted in the protocol, for the annual $PM_{2.5}$, the background concentration is developed by averaging the annual concentrations from the previous 3-year period that meets all applicable EPA monitoring requirements, such as data completeness. Per the EPA Monitor Value Reports, the average annual $PM_{2.5}$ concentration recorded at the San Bernatdino-4th Street station during the 2011 – 2013 period was 11.83 μg/m3. Note that the analysis will not need to show conformity to the 2012 12 μg/m3 standard, conformity to that standard will not apply until one year after areas are designated nonattainment. The analysis should only conformity to both the 2006 $PM_{2.5}$ standard and 1997 $PM_{2.5}$ standard of 15 μg/m3.

Design Values – the document currently states that "using modeled PM2.5 and PM10 concentrations and the background concentration values identified above, design values (DV) will be calculated for annual PM2.5, 24-hour PM2.5 and 24-hour PM10 using the step-by-step calculation procedures detailed in the Guidance, section 9.3." No further details are given regarding how these calculations will be estimated.

Receptors

The document states that a line of receptors will be placed at the roadway facility right-of-way (ROW) using 10 meter spacing, a 25-meter receptor grid will then be placed from the ROW fence line to 100 meters, and, a 50-meter receptor grid will be placed from 100 meters from ROW (end of 25-meter receptor grid) to 300 meters. However, the protocol contains no figures showing the receptors around the facility to show if any receptors have been removed due to public access issues. Areas where there is limited, but not restricted public access should not be excluded. If any receptors are going to be restricted from inclusion in the receptor grid, those receptors should explicitly discussed in the modeling protocol.